

Patent Claims

1. A steering-column assembly (1) for a motor vehicle, having an outer casing tube (2), a telescopic inner casing tube (2.1) and a telescopic drive (5) having a spindle nut (5.6), a telescopic spindle (5.1) which is fastened to the inner casing tube (2.1) via a crash element (4), and a telescopic motor (5.2) having a step-down gear mechanism (5.3), characterized in that the crash element (4) is of at least partially hollow configuration and accommodates the spindle nut (5.6).
2. The apparatus as claimed in claim 1, characterized in that the crash element (4) is formed by a sleeve (4.1) and a pin (4.2) which is positioned coaxially with respect to the sleeve (4.1), is at least partially inserted into the sleeve (4.1) at one end side of the sleeve (4.1) and is fastened to the sleeve (4.1).
3. The apparatus as claimed in claim 1 or 2, characterized in that the telescopic spindle (5.1) is connected via a flexible drive shaft (5.4) to an output shaft of the step-down gear mechanism (5.3), the opposite side of the telescopic spindle (5.1) from the spindle nut (5.6) being mounted rotatably in a bearing block (5.5) -which is structurally separate from the step-down gear mechanism (5.3).
4. The apparatus as claimed in one of the preceding claims, characterized in that the tensile and compressive forces which are produced during telescoping of the inner casing tube (2.1) in the direction of a longitudinal axis (x) of the telescopic spindle (5.1) are passed directly from the telescopic spindle (5.1) to a part of the vehicle body via the bearing block (5.5).
5. The apparatus as claimed in one of the preceding claims, characterized in that the outer casing tube (2) can be pivoted about a y-axis by a pivot drive (6) which has a spindle nut (5.6), a spindle (6.1) and a flexible drive shaft (6.4), the spindle (6.1) being connected via the flexible drive shaft (6.4) to an output shaft of a step-down gear mechanism (6.3), and the opposite side of the spindle (6.1) from the spindle nut

(5.6) being mounted rotatably in a bearing block (6.5) which is structurally separate from the step-down gear mechanism (5.3).

6. The apparatus as claimed in one of the preceding claims, characterized in that the longitudinal axis (x, x') and the rotational axis (a) of the output shaft of the step-down gear mechanism (5.3, 6.3), which output shaft is connected directly to the flexible drive shaft (5.4, 6.4), enclose an angle (α) between 135° and 180°.
7. The apparatus as claimed in one of the preceding claims, characterized in that the tensile and compressive forces which are produced during pivoting of the outer casing tube (2) in the direction of a longitudinal axis (x') of the spindle (6.1) are passed directly from the spindle (6.1) to a part of the vehicle body via the bearing block (6.5).
8. The apparatus as claimed in one of the preceding claims, characterized in that the spindle nut (5.6, 6.6) which engages with the telescopic spindle (5.1) or with the spindle (6.1) and the flexible drive shaft (5.4, 6.4) which is connected to the telescopic spindle (5.1) or the spindle (6.1) are formed at least partially from plastic.
9. The apparatus as claimed in one of the preceding claims, characterized in that the flexible drive shaft (5.4, 6.4) is mounted in the bearing block (5.5, 6.5) in a manner which is connected on the output side to the telescopic spindle (5.1) or to the spindle (6.1), and is mounted in the step-down gear mechanism (5.3, 6.3) in a manner which is connected on the input side to the output shaft.
10. The apparatus as claimed in one of the preceding claims, characterized in that the step-down gear mechanism (5.3, 6.3) and/or the motor (5.2, 6.2) are/is mounted on the vehicle body by a bearing (5.7, 6.7) which is formed at least partially from plastic.